APPENDIX B

SENSITIVE INVERTEBRATES REPORT

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11 August 2003

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Re: ESA Project #202639
Southern California Gas' Surplus Property in Playa del Rey and Marina del Rey, CA
Report on Sensitive Invertebrates

Dear Tim:

This report presents the findings of a habitat assessment survey for sensitive invertebrate taxa that was conducted at 36 surplus lots that are part of the Playa del Rey Natural Gas Storage Facility of Southern California Gas. In addition, I also report on my findings from a focused survey that was conducted for the Globose Dune beetle, *Coelus globosus* (Coleoptera: Tenebrionidae), at two surplus lots located in Marina del Rey. The remainder of this report provides background information on each insect and describes my survey methods, findings, and recommendations for project planning.

BACKGROUND INFORMATION

The 36 surplus lots are located within or very near the historical boundaries of the El Segundo sand dunes in that formerly occurred throughout coastal portions of the communities of Playa del Rey and Marina del Rey. Specific locations of these lots are described in the Mitigated Negative Declaration (MHA Environmental Consulting, Inc. 2001) and are not repeated herein. At least 15 sensitive insect taxa are known historically to have occurred in association with the beaches, salt marshes, or sand dunes of Los Angeles County (BUGGY Data Base 2003). These taxa are as follows:

a) *Euphilotes battoides allyni*, El Segundo Blue butterfly;
b) *Danaus plexippus*, Monarch butterfly (overwintering sites only);
c) *Panoquina panoquinoides errans*, Salt Marsh skipper;
d) *Carolella busckana*, Busck's Gall moth;
e) *Eucosma hennei*, Henne's Eucosman moth;
f) *Psammobotys fordi*, Ford's Sand Dune moth;
g) *Brennania belkini*, Belkin's Dune Tabanid fly;
h) *Rhaphiomidas terminatu terminatus*, El Segundo Flower-loving fly;
i) *Cicindela gabbi*, Tiger beetle;
j) *Cicindela hirticollis gravida*, Sandy Beach Tiger beetle;
k) *Cicindela latesignata latesignata*, Tiger beetle;

l) *Cicindela senilis frosti,* Tiger beetle;
m) *Coelus globosus,* Globose Dune beetle;
n) *Coelus pacificus,* Channel Islands Dune beetle; and
o) *Trigonoscuta dorothea dorothea,* Dorothy's El Segundo Dune weevil.

Notable among these insects is the El Segundo Blue butterfly, *Euphilotes battoides allyni*, which is a federally-listed endangered species. The remaining 14 insects are recognized as species of special concern by the U.S. Fish & Wildlife Service or are tracked by the California Natural Diversity Data Base. Although these insects are not considered endangered or threatened at this time, they satisfy the definition of rare species under the California Environmental Quality Act (CEQA).

During my habitat assessment survey of the 36 lots, I searched for habitat conditions suitable to support the 15 aforementioned sensitive insects. Suitable habitat was observed for two of the insects, namely the Globose Dune beetle and the Monarch butterfly. Background information is provided on these two insects.

Globose Dune Beetle.

The genus *Coelus* includes five species of fossorial (i.e., burrowing) beetles that inhabit sand dunes along the Pacific Coast of North America. The Globose Dune beetle (GDB), *Coelus globosus,* was described by LeConte in 1851.

It occurs at scattered dune localities from Mendocino County, California to Ensenada, Baja California, Mexico. The GDB is also known from all of the Channel Islands except San Clemente Island. According to Doyen (1976), major populations occur at the Point Reyes Peninsula (Mann County), Santa Cruz (Santa Cruz County), Monterey Bay (Monterey County), Pismo Beach and Morro Bay (San Luis Obispo County). Other historical records are from Punta Gorda, Oxnard, and near Ventura (Ventura County), National City, San Diego, Coronado, and Tijuana River mouth (San Diego County), Del Monte, Little Sur Beach, Carmel, and near Big Sur (Monterey County), Goleta and Santa Barbara (Santa Barbara County), San Jose (Santa Clara County), Zuma Creek, El Segundo Dunes, Ballona Wetlands, Redondo Beach, Coral Beach, and Malibu Beach (Los Angeles County), Huntington Beach, Newport Beach and Laguna Beach (Orange County), and Manchester State Beach (Mendocino County). However, habitat at many of these historical locations has been destroyed and the status of GDB is uncertain. The type locality is San Diego.

Despite the beetle's extensive geographic range along the Pacific Coast, throughout most of its range GDB is restricted to foredunes immediately bordering the sea. At many locations, the foredunes, which are usually a narrow band of open or sparsely vegetated loose sand, generally extend no more than approximately 50 meters inland from the mean high tide line.

This flightless beetle spends nearly its entire life burrowing in loose sandy areas where common dune plants such as Sand Verbena *(Abronia maritima*: Nyctaginaceae), Beach Burr (*Ambrosia chamissonis:* Compositae), and Sea Rocket *(Cakile maritima:* Cruciferae) grow. Immature life stages of the beetle also are found buried in the sand. Adults and larvae are sometimes found in open sandy areas, but more typically are found in the sand about 5 to 10 cm.

beneath the above-noted plants.

Habitat for the Globose Dune beetle has been destroyed or altered at many locations throughout its geographic range. Recreational activities, urbanization, sand mining, encroachment by annual grasses, weeds, ice plant, and European Beach grass are factors that have contributed to the decline of the GDB. Slobodchikoff and Doyen (1977) studied sand-dwelling beetles and insects at a number of locations where European Beach grass had been introduced to stabilize sand dunes and found a greatly reduced species diversity of native entomofauna, which was attributed to alteration of the microhabitat conditions by roots of the introduced grass. For these reasons, the USFWS (1989) recognized the GDB as a category 2 candidate for endangered or threatened species status. More recently, it has been treated as a species of special concern.

Monarch Butterfly.

Due to its nearly worldwide distribution and annual migration behavior, the Monarch butterfly is one of the best-known insects in the world. Its annual migrations to California and central Mexico are legendary. However, this migratory phenomenon is threatened due to loss of habitat in areas favored by the butterfly to survive the winter months. Thus the conservation of overwintering sites of the Monarch has become a high priority for the International Union for the Conservation of Nature and Natural Resources (IUCN) and government resource agencies. The IUCN (1983) recognized the Monarch's winter roosting sites in California and Mexico as a "threatened phenomenon".

At this time, Monarchs are not specifically protected under federal or state laws, however, in California the butterfly and its overwintering habitats can be indirectly conserved under two statutes dealing with natural resources and the environment, namely the Public Resources Code and the Fish and Game Code. The primary agencies responsible for administering and enforcing the former statute are the California Coastal Commission and the California Department of Parks and Recreation, while the California Department of Fish & Game (CDF&G) is responsible for the latter statute. CDF&G tracks the locations of Monarch overwintering sites through the California Natural Diversity Data Base (CNDDB).

Monarchs and their relatives are tropical butterflies, thus they cannot survive the colder winter months of most parts of North America. For this reason, Monarch butterflies travel during the fall months of each year to their wintering areas where temperatures are more moderate. In general, Monarchs that live west of the Rocky Mountains migrate to coastal areas of California, while those that live east of the Rockies travel to a few sites in the mountains of Central Mexico. In coastal California, overwintering sites (also referred to as winter roosting sites) range from northern Baja California to southern Mendocino County, and most overwintering sites are usually located within 0.5 to 1 mile of the coast.

In California, clustering behavior begins once migrating Monarchs reach their overwintering sites in the fall. Two types of clustering occur:

a) temporary aggregations that are transient clusters of short duration; and
b) permanent roosts that are long term (past the winter solstice) hibernal clusters, where overwintering occurs, which also possess the environmental conditions that allow the

butterflies to mate in January and February before their spring dispersal (Urquhart 1960). I should note that the term "permanent" is a misnomer since changes in habitat conditions may cause Monarchs to not use a particular site for winter roosting, thus I prefer the terms "overwintering sites" or "winter roosting sites" to refer to "permanent roosts" and use these terms interchangeably in this report.

In the fall months, typically in September and October, numerous, generally small temporary aggregations are formed, especially in areas where nectar plants are plentiful near the coast. Monarchs at many of these sites disperse to permanent roosting sites as nectar sources, air temperature, and day length decrease. Some sites may serve as permanent roosts one year and temporary aggregations another year, or a mixture of the two. Also, some locations may not be used for either purpose for a period of time. Thus site fidelity can vary dramatically over a period of years.

The formation of Monarch aggregations and their persistence is dynamic. Generally, sites that support larger aggregations tend to form more predicatably (i.e., higher fidelity) year after year and routinely persist beyond the winter solstice (i.e., more permanence) than sites that support smaller aggregations. Several factors are known to influence these dynamics, including changes in site quality, variation in local seasonal weather conditions, and cyclic variation in the overall abundance of Monarchs from year-to-year (Tuskes and Brower 1978). Also, the date of aggregation breakup varies with seasonal weather conditions. It can occur as early as late January in warm, dry years, or as late as March in cool, wet years. The timing of aggregation breakup is usually correlated with the onset of sexual activity, which is influenced by the weather.

Overwintering sites are usually characterized by groves of trees of mixed height and diameter, with an understory of brush and sapling trees. Often there is a small clearing within a stand of trees, or formed by a combination of the trees and surrounding topography, to provide shelter for the butterfly. These overwintering sites protect the butterfly from prevailing on-shore winds and freezing temperatures, plus exposure to the sun. The vegetation serves as a thermal "blanket" which moderates extreme weather conditions (Calvert and Brower 1982).

Recent research has demonstrated that forest canopy structure is a primary determinant of microclimatic conditions in forest stands, and is undoubtedly an important factor in the Monarch's selection of particular locations as overwintering roosts (Bell 1997; Leong 1990; Sakai et al. 1989; Weiss et al. 1991). Many of the best overwintering sites provide a heterogeneous mixture of habitat conditions and resultant microclimatic conditions that allow the Monarchs to survive seasonal changes in climatic conditions during the winter. For example, overwintering habitats must provide wind protected roost locations (usually tree branches that are 15-50 feet above ground), with buffered temperatures, relatively high humidity, and filtered sunlight throughout the fall and winter months. As weather conditions and exposure to sunlight vary over the winter months, greater habitat heterogeneity at an overwintering site permits the Monarch roosts to satisfy their thermoregulatory needs by moving from tree to tree in response to changes in weather conditions. Thus during the early part of the overwintering period (October – November), when daily temperature maxima are relatively high, Monarchs tend to cluster in locations that provide brief morning insolation, with mid-day and afternoon shade.

Later in the season (December – February), when temperature maxima are lower, they tend to roost in trees that receive afternoon sunlight. Trees surrounding roost locations, known as windbreak or buffer trees, provide both wind protection and ameliorate microclimatic conditions near the roost trees.

A number of cluster sites in coastal California are located in groves of introduced trees. Favored trees for Monarch roosts include, Blue Gum *(Eucalyptus globulus),* River Gum *(E. camaldulensis),* Monterey Pine *(Pinus radiata),* and Monterey Cypress *(Cupressus macrocarpa),* although a number of other native and introduced species of trees are less frequently utilized (Lane 1993). Clusters typically form between about 15 and 50 feet above ground, but have been observed as low as 6 feet and as high as 75 feet.

Cluster sites are protected from winds by a combination of tree cover (i.e., spatial configuration and density) and topography. Gullies, canyons, creek drainages, and the lee sides of hills are areas where Monarchs typically roost, if the appropriate tree cover is present. Man-made structures can also provide protection. Although the butterflies are inactive on colder, rainy, or foggy days, they will fly from the cluster on warmer, sunny days to obtain the water and nectar that are needed to sustain the butterflies through the winter. Thus, a nearby source of water and an abundance of fall and winter-blooming nectar plants are also important factors in determining where the butterflies will roost. Monarchs can obtain water from natural or man-made bodies of water, runoff from sprinklers, and dew on vegetation (Nagano and Lane 1985). Important nectar plants at many winter roosting sites include, *Eucalyptus* trees, Coyote Bush *(Baccharis),* wild mustard *(Brassica),* and Bottlebrush *(Callistemon),* although other native and introduced species will be used if available.

In concluding this discussion, I would like to emphasize that although a number of basic features are important determinants in the suitability of a particular location to serve as a winter roosting site by the Monarch butterfly, there is also an interaction of these and other factors that is only beginning to be understood by researchers. Also, because features of a site can change due to various factors such as the growth of trees and understory vegetation, thinning or removal of trees, removal of brush, and changes in nectar plant abundance, Monarch usage of a particular site may vary from year-to-year and for longer durations. Indeed, new roosting sites continue to be discovered in California as conditions become favorable, even in areas where roosts were not previously observed. Similarly, when habitat quality deteriorates at locations that previously supported winter roosts, Monarchs will cease to roost at these sites. Clearing of brush and thinning of trees are common vegetation management practices that have adversely impacted Monarch roosting sites, even on public lands (Nagano and Lane 1985; Weiss et al. 1991).

SURVEY METHODS

My habitat assessment survey of the 36 surplus lots was conducted on May 12th, 2003. I hiked throughout each of the properties, except for the two adjacent lots in Marina del Rey that were enclosed by a fence and locked gate. At each location I searched for food plants or other features that provide suitable habitat for each of the 15 sensitive insects on my master list of potential taxa.

Based on the findings of my habitat assessment survey, a focused survey for the Globose Dune beetle was conducted at two adjacent lots located in Marina del Rey on May 28th, 2003. Adults of the beetle are active throughout the year and live in the sand. During this survey I sifted sand located underneath Sea Rocket that grew along the western border of the two lots. Specimens of the beetle were preserved in ethanol and identified in my office using a stereomicroscope and pertinent entomological literature.

SURVEY RESULTS

Habitat Assessment Survey.

Native habitats at most of the 36 surplus have been severely degraded by past and current land uses. At most sites the native flora has been largely replaced by weeds and ornamental plants. As a result, the vast majority of the surplus lots do not provide suitable habitat for any of the 15 sensitive insects treated in this report. Exceptions include two clusters of surplus lots:

a) cluster 8 at 79th St/83rd St./Gulana St. in Playa del Rey (8 lots); and
b) cluster 12 at Union Jack St./Speedway Ave. in Marina del Rey (2 lots).

Several eucalyptus trees grow at Cluster 8, with ivy climbing up their trunks and on the ground. Although these plants are not native, they are essential components of potential overwintering habitat for the Monarch butterfly. This butterfly roosts on eucalyptus trees during the fall and winter overwintering period, and ivy is an important nectar source in the fall when few other butterfly-compatible nectar plants are flowering. The surrounding topography, trees on neighboring parcels, and the surrounding residences afford this site some shelter.

A small sand mound at Cluster 12 supports Sea Rocket and loose sand, factors that comprise suitable habitat for the Globose Dune beetle. Figure 1 is a photograph that illustrates this sand mound, which is situated along the western border of the site. Because the potentially suitable habitat for this beetle was identified at Cluster 12, I recommended that a focused presence-absence survey be performed for the beetle.

Focused Survey for the Globose Dune Beetle.

Approximately 15 adults of the Globose Dune beetle were found at various locations in the sand mound (Figure 1) of Cluster 12 on May 28th, 2003. No adults of the beetle were observed burrowing in the flatter portions of this site (i.e., in the foreground of Figure 1).

EVALUATION OF PROJECT IMPACTS AND RECOMMENDATIONS

Globose Dune Beetle.

My evaluation of impacts assumes that the surplus lots will be sold and that future development on them is likely to occur. The sale of the 34 surplus lots located in Playa del Rey would not affect the beetle since it does not occur there and those lots do not support suitable habitat for the beetle. Since no impacts to the beetle or its habitat are anticipated at the 34 lots, no mitigation is necessary.

While the sale of the two surplus lots at Cluster 12 in Marina del Rey would not necessarily impact the beetle, certain types of future uses of these properties, such as

development, would. On-site mitigation may be tricky as any development or other uses of the property could have both direct and indirect impacts on the small portion of the site that actually supports the beetle.

In addition, current uses of these lots by the neighbors may have an adverse impact on the beetle before their sale. Because the beetle habitat at Cluster 12 is so small in size, the habitat and beetle are particularly vulnerable. Neighbors have scattered wildflower seed (including a number of exotics), have planted a garden, and are watering the site with a spray sprinkler. The introduction of exotics, increased vegetation cover, especially on the sand mound inhabited by the beetle, and ground saturation outside of the normal rainy season period, are factors that could adversely affect the beetle.

Monarch Butterfly.

Although the 8 lots at Cluster 8 are not a documented overwintering site for the Monarch butterfly (California Natural Diversity Data Base 2003), new locations are discovered every year. I suspect that if this location is utilized by the Monarch, it is a temporary aggregation site used in the fall. Surveys would need to be conducted during the fall, from about mid-September through the end of November to determine if the site is used by the Monarch in this manner. It is unlikely to be a winter aggregation site as the tree canopy is rather limited.

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If you have any questions about my survey or this report, please give me a call.

Sincerely,

Richard A. Arnold, Ph.D.
President

Attachment: Figure 1